

## SEQUENCE LISTING

&lt;110&gt; KYOWA HAKKO KOGYO CO., LTD

&lt;120&gt; Humanized anti-GD3 antibody and it's cytokine conjugate

&lt;130&gt;11239WO1

&lt;140&gt;

&lt;141&gt;

&lt;150&gt;H11-278291

&lt;151&gt;1999-09-30

&lt;160&gt; 57

&lt;170&gt; PatentIn Ver. 2.0

&lt;210&gt; 1

&lt;211&gt; 138

&lt;212&gt; PRT

&lt;213&gt; Mus musculus

&lt;400&gt; 1

Met Glu Phe Gly Leu Ser Trp Leu Phe Leu Val Leu Val Phe Lys Gly  
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Val Gln Cys Glu Val Thr Leu Val Glu Ser Gly Gly Asp Phe Val Lys  
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Pro Gly Gly Ser Leu Lys Val Ser Cys Ala Ala Ser Gly Phe Ala Phe  
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Ser His Tyr Ala Met Ser Trp Val Arg Gln Thr Pro Ala Lys Arg Leu  
30 35 40 45

Glu Trp Val Ala Tyr Ile Ser Ser Gly Gly Ser Gly Thr Tyr Tyr Ser  
50 55 60

Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn  
65 70 75

Thr Leu Tyr Leu Gln Met Arg Ser Leu Arg Ser Glu Asp Ser Ala Met  
80 85 90

Tyr Phe Cys Thr Arg Val Lys Leu Gly Thr Tyr Tyr Phe Asp Ser Trp  
95 100 105

Gly Gln Gly Thr Thr Leu Thr Val Ser Ser  
110 115

&lt;210&gt; 2

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 <213> Mus musculus

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 Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Thr Ala Ser Ser Leu Pro  
 -1 1 5 10  
 Ala Ser Leu Gly Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Asp  
 15 20 25  
 Ile Ser Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val  
 30 35 40  
 Lys Leu Leu Ile Phe Tyr Ser Ser Asn Leu His Ser Gly Val Pro Ser  
 45 50 55 60  
 Arg Phe Ser Gly Gly Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser  
 65 70 75  
 Asn Leu Glu Pro Glu Asp Ile Ala Thr Tyr Phe Cys His Gln Tyr Ser  
 80 85 90  
 Lys Leu Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg  
 95 100 105

<210> 3  
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 <213> Mus musculus

<400> 3  
 His Tyr Ala Met Ser  
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<210> 4  
 <211> 17  
 <212> PRT  
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<400> 4  
 Tyr Ile Ser Ser Gly Gly Ser Gly Thr Tyr Tyr Ser Asp Ser Val Lys Gly  
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<210> 5  
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 <212> PRT  
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<400> 5

Val Lys Leu Gly Thr Tyr Tyr Phe Asp Ser  
 1 5 10

<210> 6  
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<400> 6  
 Ser Ala Ser Gln Asp Ile Ser Asn Tyr Leu Asn  
 1 5 10

<210> 7  
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 <212> PRT  
 <213> Mus musculus

<400> 7  
 Tyr Ser Ser Asn Leu His Ser  
 1 5

<210> 8  
 <211> 9  
 <212> PRT  
 <213> Mus musculus

<400> 8  
 His Gln Tyr Ser Lys Leu Pro Trp Thr  
 1 5

<210> 9  
 <211> 119  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:synthetic protein

<400> 9  
 Glu Val Gln Leu Val Glu Ser Gly Gly Asp Phe Val Gln Pro Gly Gly  
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Ser Leu Arg Val Ser Cys Ala Ala Ser Gly Phe Ala Phe Ser His Tyr  
 20 25 30

Ala Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val  
 35 40 45

Ala Tyr Ile Ser Ser Gly Gly Ser Gly Thr Tyr Tyr Ser Asp Ser Val  
 50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr

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<210> 10
<211> 108
<212> PRT
<213> Artificial Sequence
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<400> 10
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
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Asp Arg Val Thr Ile Thr Cys Ser Ala Ser Gln Asp Ile Ser Asn Tyr
          20                      25                      30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
      35                      40                      45

Phe Tyr Ser Ser Asn Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
      50                      55                      60

Gly Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Leu Gln Pro
  65                      70                      75                      80

Glu Asp Phe Ala Thr Tyr Tyr Cys His Gln Tyr Ser Lys Leu Pro Trp
          85                      90                      95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
      100                      105

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<210> 11
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<212> DNA
<213> Artificial Sequence
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tcctttgtttt caaaggtggt cagtgtgagg tgcag                                     95
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<400> 12
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cccccaagact  ccaccagctg  cacctcacac  tgaacac                                     97
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<220>  
<223> Description of Artificial Sequence:synthetic DNA

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<210> 14
<211> 97
<212> DNA
<213> Artificial Sequence
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<400> 14
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aatagtaggt gccactacca ccactactaa tataagc                                97
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<220>  
<223> Description of Artificial Sequence:synthetic DNA

<210>	16
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Lys Leu Leu Ile Phe Tyr Ser Ser Asn Leu His Ser Gly Val Pro Ser  
45 50 55 60

agg ttc agc ggc ggt gga tct ggg aca gat tat act ctc acc atc agc 288  
Arg Phe Ser Gly Gly Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser  
65 70 75

agc ctg cag cct gaa gat ttt gca act tat tac tgt cat cag tat agt 336  
Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys His Gln Tyr Ser  
80 85 90

aag ctt ccg tgg acg ttc ggc cag ggg acc aag gta gag att aaa cgt 384  
Lys Leu Pro Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg  
95 100 105

<210> 28  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:synthetic DNA

<400> 28  
actgatgaca gaaataagtt gcaaaa 26

<210> 29  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:synthetic DNA

<400> 29  
ttttgcaact tatttctgtc atcagt 26

<210> 30  
<211> 384  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:synthetic DNA

<220>  
<221> CDS  
<222> (1)..(384)

<400> 30  
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Met Met Ser Ser Ala Gln Phe Leu Gly Leu Leu Leu Cys Phe Gln  
-20 -15 -10 -5

ggc acc aga tgt gac atc cag atg acc cag tct cca tcc tcc ctg tct 96

Gly	Thr	Arg	Cys	Asp	Ile	Gln	Met	Thr	Gln	Ser	Pro	Ser	Ser	Leu	Ser	
			-1	1				5					10			
gca	tct	gta	gga	gac	aga	gtc	acc	atc	act	tgt	agt	gca	agt	cag	gac	144
Ala	Ser	Val	Gly	Asp	Arg	Val	Thr	Ile	Thr	Cys	Ser	Ala	Ser	Gln	Asp	
		15					20					25				
att	agt	aat	tat	tta	aac	tgg	tat	cag	cag	aaa	cca	ggg	aaa	gcc	cct	192
Ile	Ser	Asn	Tyr	Leu	Asn	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Lys	Ala	Pro	
	30					35					40					
aag	ctc	ctg	atc	ttt	tac	tca	tca	aat	tta	cac	tcg	ggg	gtc	cca	tca	240
Lys	Leu	Leu	Ile	Phe	Tyr	Ser	Ser	Asn	Leu	His	Ser	Gly	Val	Pro	Ser	
45					50					55					60	
agg	ttc	agc	ggc	ggg	gga	tct	ggg	aca	gat	tat	act	ctc	acc	atc	agc	288
Arg	Phe	Ser	Gly	Gly	Gly	Ser	Gly	Thr	Asp	Tyr	Thr	Leu	Thr	Ile	Ser	
				65				70						75		
agc	ctg	cag	cct	gaa	gat	ttt	gca	act	tat	ttc	tgt	cat	cag	tat	agt	336
Ser	Leu	Gln	Pro	Glu	Asp	Phe	Ala	Thr	Tyr	Phe	Cys	His	Gln	Tyr	Ser	
			80					85					90			
aag	ctt	ccg	tgg	acg	ttc	ggc	cag	ggg	acc	aag	gta	gag	att	aaa	cgt	384
Lys	Leu	Pro	Trp	Thr	Phe	Gly	Gln	Gly	Thr	Lys	Val	Glu	Ile	Lys	Arg	
		95					100					105				

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<210> 31
<211> 28
<212> DNA
<213> Artificial Sequence
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<220>  
<223> Description of Artificial Sequence:synthetic DNA

<400> 31  
ggagcttaac ggctttgtct ggtttctg 28

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<210> 32
<211> 28
<212> DNA
<213> Artificial Sequence
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<220>  
<223> Description of Artificial Sequence:synthetic DNA

<400> 32  
cagaaaccag acaaagccgt taagctcc 28

<210>	33
<211>	384
<212>	DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:synthetic DNA

<220>

<221> CDS

<222> (1)..(384)

<400> 33

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-20 -15 -10 -5	
ggt acc aga tgt gac atc cag atg acc cag tct cca tcc tcc ctg tct	96
Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser	
-1 1 5 10	
gca tct gta gga gac aga gtc acc atc act tgt agt gca agt cag gac	144
Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Ser Ala Ser Gln Asp	
15 20 25	
att agt aat tat tta aac tgg tat cag cag aaa cca gac aaa gcc gtt	192
Ile Ser Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Asp Lys Ala Val	
30 35 40	
aag ctc ctg atc ttt tac tca tca aat tta cac tcg ggg gtc cca tca	240
Lys Leu Leu Ile Phe Tyr Ser Ser Asn Leu His Ser Gly Val Pro Ser	
45 50 55 60	
agg ttc agc ggc ggt gga tct ggg aca gat tat act ctc acc atc agc	288
Arg Phe Ser Gly Gly Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser	
65 70 75	
agc ctg cag cct gaa gat ttt gca act tat tac tgt cat cag tat agt	336
Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys His Gln Tyr Ser	
80 85 90	
aag ctt ccg tgg acg ttc ggc cag ggg acc aag gta gag att aaa cgt	384
Lys Leu Pro Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg	
95 100 105	

<210> 34

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:synthetic DNA

<400> 34

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<210> 35

<400> 36																	
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-20				-15						-10				-5			
ggc	acc	aga	tgt	gac	atc	cag	atg	acc	cag	tct	cca	tcc	tcc	ctg	tct	96	
Gly	Thr	Arg	Cys	Asp	Ile	Gln	Met	Thr	Gln	Ser	Pro	Ser	Ser	Leu	Ser		
		-1		1				5				10					
gca	tct	gta	gga	gac	aga	gtc	acc	atc	act	tgt	agt	gca	agt	cag	gac	144	
Ala	Ser	Val	Gly	Asp	Arg	Val	Thr	Ile	Thr	Cys	Ser	Ala	Ser	Gln	Asp		
		15				20						25					
att	agt	aat	tat	tta	aac	tgg	tat	cag	cag	aaa	cca	ggg	aaa	gcc	cct	192	
Ile	Ser	Asn	Tyr	Leu	Asn	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Lys	Ala	Pro		
30						35				40							
aag	ctc	ctg	atc	ttt	tac	tca	tca	aat	tta	cac	tgc	ggg	gtc	cca	tca	240	
Lys	Leu	Leu	Ile	Phe	Tyr	Ser	Ser	Asn	Leu	His	Ser	Gly	Val	Pro	Ser		
45					50				55				60				
agg	ttc	agc	ggc	ggc	gga	tct	ggg	aca	gat	tat	agt	ctc	acc	atc	agc	288	
Arg	Phe	Ser	Gly	Gly	Gly	Ser	Gly	Thr	Asp	Tyr	Ser	Leu	Thr	Ile	Ser		
				65				70				75					
aat	ctg	cag	cct	gaa	gat	atc	gca	act	tat	tac	tgt	cat	cag	tat	agt	336	
Asn	Leu	Gln	Pro	Glu	Asp	Ile	Ala	Thr	Tyr	Tyr	Cys	His	Gln	Tyr	Ser		
		80						85				90					
aag	ctt	ccg	tgg	acg	ttc	ggc	cag	ggg	acc	aag	gta	gag	att	aaa	cgt	384	
Lys	Leu	Pro	Trp	Thr	Phe	Gly	Gln	Gly	Thr	Lys	Val	Glu	Ile	Lys	Arg		
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<210> 37  
 <211> 25  
 <212> DNA  
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:synthetic DNA

<400> 37  
 ttcaggctgc agattgctga tgggtg 25

<210> 38  
 <211> 25  
 <212> DNA  
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:synthetic DNA

<400> 38  
 caccatcagc aatctgcagc ctgaa 25

<210> 39  
 <211> 384  
 <212> DNA  
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:synthetic DNA

<220>

<221> CDS

<222> (1)..(384)

<400> 39  
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 -20 -15 -10 -5

ggt acc aga tgt gac atc cag atg acc cag tct cca tcc tcc ctg tct 96  
 Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser  
 -1 1 5 10

gca tct gta gga gac aga gtc acc atc act tgt agt gca agt cag gac 144  
 Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Ser Ala Ser Gln Asp  
 15 20 25

att agt aat tat tta aac tgg tat cag cag aaa cca ggg aaa gcc cct 192  
 Ile Ser Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro  
 30 35 40

aag ctc ctg atc ttt tac tca tca aat tta cac tcg ggg gtc cca tca 240  
 Lys Leu Leu Ile Phe Tyr Ser Ser Asn Leu His Ser Gly Val Pro Ser  
 45 50 55 60

agg ttc agc ggc ggt gga tct ggg aca gat tat act ctc acc atc agc 288  
Arg Phe Ser Gly Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser  
65 70 75

aat ctg cag cct gaa gat ttt gca act tat tac tgt cat cag tat agt 336  
Asn Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys His Gln Tyr Ser  
80 85 90

aag ctt ccg tgg acg ttc ggc cag ggg acc aag gta gag att aaa cgt 384  
Lys Leu Pro Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg  
95 100 105

<210> 40  
<211> 30  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:synthetic DNA

<400> 40  
gacagaaata agttgcgata tcttcaggct 30

<210> 41  
<211> 30  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:synthetic DNA

<400> 41  
agcctgaaga tatcgcaact tatttctgtc 30

<210> 42  
<211> 384  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:synthetic DNA

<220>  
<221> CDS  
<222> (1)..(384)

<400> 42  
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Met Met Ser Ser Ala Gln Phe Leu Gly Leu Leu Leu Cys Phe Gln  
-20 -15 -10 -5

ggc acc aga tgt gac atc cag atg acc cag tct cca tcc tcc ctg tct 96

Gly	Thr	Arg	Cys	Asp	Ile	Gln	Met	Thr	Gln	Ser	Pro	Ser	Ser	Leu	Ser	
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Ala	Ser	Val	Gly	Asp	Arg	Val	Thr	Ile	Thr	Cys	Ser	Ala	Ser	Gln	Asp	
		15					20					25				
att	agt	aat	tat	tta	aac	tgg	tat	cag	cag	aaa	cca	ggg	aaa	gcc	cct	192
Ile	Ser	Asn	Tyr	Leu	Asn	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Lys	Ala	Pro	
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aag	ctc	ctg	atc	ttt	tac	tca	tca	aat	tta	cac	tcg	ggg	gtc	cca	tca	240
Lys	Leu	Leu	Ile	Phe	Tyr	Ser	Ser	Asn	Leu	His	Ser	Gly	Val	Pro	Ser	
		45				50				55				60		
agg	ttc	agc	ggc	ggt	gga	tct	ggg	aca	gat	tat	act	ctc	acc	atc	agc	288
Arg	Phe	Ser	Gly	Gly	Gly	Ser	Gly	Thr	Asp	Tyr	Thr	Leu	Thr	Ile	Ser	
			65					70						75		
agc	ctg	cag	cct	gaa	gat	atc	gca	act	tat	ttc	tgt	cat	cag	tat	agt	336
Ser	Leu	Gln	Pro	Glu	Asp	Ile	Ala	Thr	Tyr	Phe	Cys	His	Gln	Tyr	Ser	
			80					85					90			
aag	ctt	ccg	tgg	acg	ttc	ggc	cag	ggg	acc	aag	gta	gag	att	aaa	cgt	384
Lys	Leu	Pro	Trp	Thr	Phe	Gly	Gln	Gly	Thr	Lys	Val	Glu	Ile	Lys	Arg	
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<210> 43  
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 <212> DNA  
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<220>  
 <223> Description of Artificial Sequence:synthetic DNA

<400> 43  
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 gtcactctgga tgtcacatct ggtacct 87

<210> 44  
 <211> 89  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:synthetic DNA

<400> 44  
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 aaaccaggga aagccggttaa gctcctgat 89

<210> 45  
 <211> 89

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:synthetic DNA

<400> 45

taatctgtcc cagatccacc gccgctgaac cttgatggga cccccgagtg taaatttgat 60  
gagtaaaaga tcaggagctt aacggcttt 89

<210> 46

<211> 92

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:synthetic DNA

<400> 46

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acttatttct gtcacagta tagtaagctt cc 92

<210> 47

<211> 384

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:synthetic DNA

<220>

<221> CDS

<222> (1)..(384)

<400> 47

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ggt acc aga tgt gac atc cag atg acc cag tct gca tcc tcc ctg cct 96  
Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Ser Ala Ser Ser Leu Pro  
-1 1 5 10

gca tct gta gga gac aga gtc acc atc act tgt agt gca agt cag gac 144  
Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Ser Ala Ser Gln Asp  
15 20 25

att agt aat tat tta aac tgg tat cag cag aaa cca ggg aaa gcc gtt 192  
Ile Ser Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Val  
30 35 40

aag ctc ctg atc ttt tac tca tca aat tta cac tcg ggg gtc cca tca 240  
Lys Leu Leu Ile Phe Tyr Ser Ser Asn Leu His Ser Gly Val Pro Ser  
45 50 55 60

agg ttc agc ggc ggt gga tct ggg aca gat tat act ctc acc atc agc 288  
Arg Phe Ser Gly Gly Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser  
65 70 75

agc ctg cag cct gaa gat ttt gca act tat ttc tgt cat cag tat agt 336  
Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Phe Cys His Gln Tyr Ser  
80 85 90

aag ctt ccg tgg acg ttc ggc cag ggg acc aag gta gag att aaa cgt 384  
Lys Leu Pro Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg  
95 100 105

<210> 48

<211> 384

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:synthetic DNA

<220>

<221> CDS

<222> (1)..(384)

<400> 48

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Met Met Ser Ser Ala Gln Phe Leu Gly Leu Leu Leu Cys Phe Gln  
-20 -15 -10 -5

ggc acc aga tgt gac atc cag atg acc cag tct cca tcc tcc ctg tct 96  
Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser  
-1 1 5 10

gca tct gta gga gac aga gtc acc atc act tgt agt gca agt cag gac 144  
Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Ser Ala Ser Gln Asp  
15 20 25

att agt aat tat tta aac tgg tat cag cag aaa cca gac aaa gcc gtt 192  
Ile Ser Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Asp Lys Ala Val  
30 35 40

aag ctc ctg atc ttt tac tca tca aat tta cac tcg ggc gtc cca tca 240  
Lys Leu Leu Ile Phe Tyr Ser Ser Asn Leu His Ser Gly Val Pro Ser  
45 50 55 60

agg ttc agc ggc ggt gga tct ggg aca gat tat act ctc acc atc agc 288  
Arg Phe Ser Gly Gly Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser  
65 70 75

agc ctg cag cct gaa gat atc gca act tat ttc tgt cat cag tat agt 336  
Ser Leu Gln Pro Glu Asp Ile Ala Thr Tyr Phe Cys His Gln Tyr Ser  
80 85 90

aag ctt ccg tgg acg ttc ggc cag ggg acc aag gta gag att aaa cgt 384

Lys Leu Pro Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg  
 95 100 105

<210> 49  
 <211> 76  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:synthetic DNA

<400> 49  
 catgcatgag gctctgcaca accactacac gcagaagagc ctctccctgt ctccccggggg 60  
 agaattcatt gatcag 76

<210> 50  
 <211> 85  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:synthetic DNA

<400> 50  
 gatcctgatac aatgaattct cccccggggag acagggagag gctcttctgc gtgtagtggt 60  
 tgtgcagagc ctcatgcatg gggcc 85

<210> 51  
 <211> 37  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:synthetic DNA

<400> 51  
 gtctccccggg aaagcaccta ctagtagttc tacaaag 37

<210> 52  
 <211> 38  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:synthetic DNA

<400> 52  
 ccctgatcaa tgaattcaag tcagtgttga gatgatgc 38

<210> 53

<211> 582

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:synthetic protein

<400> 53

Glu Val Gln Leu Val Glu Ser Gly Gly Asp Phe Val Gln Pro Gly Gly  
1 5 10 15

Ser Leu Arg Val Ser Cys Ala Ala Ser Gly Phe Ala Phe Ser His Tyr  
20 25 30

Ala Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val  
35 40 45

Ala Tyr Ile Ser Ser Gly Gly Ser Gly Thr Tyr Tyr Ser Asp Ser Val  
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr  
65 70 75 80

Leu Gln Met Arg Ser Leu Arg Ala Glu Asp Ser Ala Val Tyr Phe Cys  
85 90 95

Thr Arg Val Lys Leu Gly Thr Tyr Tyr Phe Asp Ser Trp Gly Gln Gly  
100 105 110

Thr Leu Leu Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe  
115 120 125

Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu  
130 135 140

Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp  
145 150 155 160

Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu  
165 170 175

Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser  
180 185 190

Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys Pro  
195 200 205

Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser Cys Asp Lys  
210 215 220

Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro  
225 230 235 240

Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser  
245 250 255

Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp



Ala Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe Cys Gln Ser

565

570

575

Ile Ile Ser Thr Leu Thr  
580

<210> 54  
<211> 108  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:synthetic protein

<400> 54  
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly  
1 5 10 15  
Asp Arg Val Thr Ile Thr Cys Ser Ala Ser Gln Asp Ile Ser Asn Tyr  
20 25 30  
Leu Asn Trp Tyr Gln Gln Lys Pro Asp Lys Ala Val Lys Leu Leu Ile  
35 40 45  
Phe Tyr Ser Ser Asn Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly  
50 55 60  
Gly Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Leu Gln Pro  
65 70 75 80  
Glu Asp Ile Ala Thr Tyr Phe Cys His Gln Tyr Ser Lys Leu Pro Trp  
85 90 95  
Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg  
100 105

<210> 55  
<211> 119  
<212> PRT  
<213> Mus musculus

<400> 55  
Glu Val Thr Leu Val Glu Ser Gly Gly Asp Phe Val Lys Pro Gly Gly  
1 5 10 15  
Ser Leu Lys Val Ser Cys Ala Ala Ser Gly Phe Ala Phe Ser His Tyr  
20 25 30  
Ala Met Ser Trp Val Arg Gln Thr Pro Ala Lys Arg Leu Glu Trp Val  
35 40 45  
Ala Tyr Ile Ser Ser Gly Gly Ser Gly Thr Tyr Tyr Ser Asp Ser Val  
50 55 60  
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr  
65 70 75 80

Leu Gln Met Arg Ser Leu Arg Ser Glu Asp Ser Ala Met Tyr Phe Cys  
85 90 95

Thr Arg Val Lys Leu Gly Thr Tyr Tyr Phe Asp Ser Trp Gly Gln Gly  
100 105 110

Thr Thr Leu Thr Val Ser Ser  
115

<210> 56  
<211> 108  
<212> PRT  
<213> Mus musculus

<400> 56  
Asp Ile Gln Met Thr Gln Thr Ala Ser Ser Leu Pro Ala Ser Leu Gly  
1 5 10 15

Asp Arg Val Thr Ile Ser Cys Ser Ala Ser Gln Asp Ile Ser Asn Tyr  
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile  
35 40 45

Phe Tyr Ser Ser Asn Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly  
50 55 60

Gly Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Pro  
65 70 75 80

Glu Asp Ile Ala Thr Tyr Phe Cys His Gln Tyr Ser Lys Leu Pro Trp  
85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg  
100 105

<210> 57  
<211> 582  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:synthetic protein

<400> 57  
Glu Val Thr Leu Val Glu Ser Gly Gly Asp Phe Val Lys Pro Gly Gly  
1 5 10 15

Ser Leu Lys Val Ser Cys Ala Ala Ser Gly Phe Ala Phe Ser His Tyr  
20 25 30

Ala Met Ser Trp Val Arg Gln Thr Pro Ala Lys Arg Leu Glu Trp Val  
35 40 45

Ala Tyr Ile Ser Ser Gly Gly Ser Gly Thr Tyr Tyr Ser Asp Ser Val

50	55	60
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr		
65	70	75 80
Leu Gln Met Arg Ser Leu Arg Ser Glu Asp Ser Ala Met Tyr Phe Cys		
	85	90 95
Thr Arg Val Lys Leu Gly Thr Tyr Tyr Phe Asp Ser Trp Gly Gln Gly		
	100	105 110
Thr Thr Leu Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe		
	115	120 125
Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu		
	130	135 140
Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp		
145	150	155 160
Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu		
	165	170 175
Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser		
	180	185 190
Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys Pro		
	195	200 205
Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser Cys Asp Lys		
210	215	220
Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro		
225	230	235 240
Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser		
	245	250 255
Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp		
	260	265 270
Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn		
	275	280 285
Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val		
	290	295 300
Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu		
305	310	315 320
Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys		
	325	330 335
Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr		
	340	345 350
Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr		

Ile Ile Ser Thr Leu Thr  
580